

## Technical Data Manual

## TDM

Group: Chiller  
Part Number: TDM DW2W-360  
Date: August 2022

### DW2W-360 Series Water Cooling Unit

#### Model

30 TR to 300 TR

Refrigerant HFC-410A

50/60 Hz



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**Manufactured in an ISO 9001 certified facility**



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## SAFETY WARNINGS

This manual provides information on the technical data of the Daikin DW2W-360 series.

**NOTES:** Installation and maintenance must be performed only by qualified personnel who are familiar with local codes and regulations and who have experience with this type of equipment.

### ⚠ DANGER ⚠

LOCK OUT/LABEL all power sources before starting, pressurizing, depressurizing or shutting down the chiller.

Disconnect electrical power before servicing equipment. More than one disconnection may be required to de-energize the unit. Failure to follow this warning to the letter can result in serious injury or death. Be sure to read and understand the installation, operating and service instructions in this manual.

### ⚠ WARNING ⚠

Electric shock danger. Improper handling of this equipment can cause personal injury or equipment damage. This equipment must be properly grounded. Control panel connections and maintenance should be performed only by personnel knowledgeable in the operation of the equipment being controlled. Disconnect electrical power before servicing equipment.

### ⚠ CAUTION ⚠

Static sensitive components. Static discharge during handling of the electronic circuit board can cause damage to components. Use a static strap before performing any service work. Never unplug any cables, circuit board terminal blocks, or power plugs while power is applied to the panel.

### ⚠ CAUTION ⚠

When moving refrigerant to/from the cooler using an auxiliary tank, a grounding strap should be used. An electrical charge builds up when halo-carbon refrigerant travels in a rubber hose. A grounding strap should be used between the auxiliary refrigerant tank and the cooler end sheet (ground to ground), which will safely carry the charge to ground. Failure to follow this procedure may result in damage to sensitive electronic components.

### ⚠ WARNING ⚠

If refrigerant leaks from the unit, there is a potential choking danger as the refrigerant will displace air in the immediate area. Be sure to follow all applicable published industry-related standards and local, state, and federal statutes, regulations, and codes if refrigerant is produced. Avoid exposing refrigerant to an open flame or other ignition source.

### ⚠ WARNING ⚠

Polyolester oil, commonly referred to as POE oil, is a synthetic oil used in many refrigeration systems and may be present in this Daikin product. POE oil, if it ever comes in contact with PCV/CPVC, will coat the inside wall of the PVC/CPVC pipe and cause environmental stress fractures. Although there is no PCV/CPCV pipe in this product, keep this in mind when selecting piping materials for your application, as system failure and property damage could occur. Consult the pipe manufacturer's recommendations to determine appropriate pipe applications.

## DANGER IDENTIFICATION INFORMATION

### ⚠ DANGER ⚠

Danger indicates a dangerous situation which, if not avoided, will result in death or serious injury.

### ⚠ WARNING ⚠

Warning indicates a potentially dangerous situation which may result in property damage, personal injury or death if not avoided

### ⚠ CAUTION ⚠

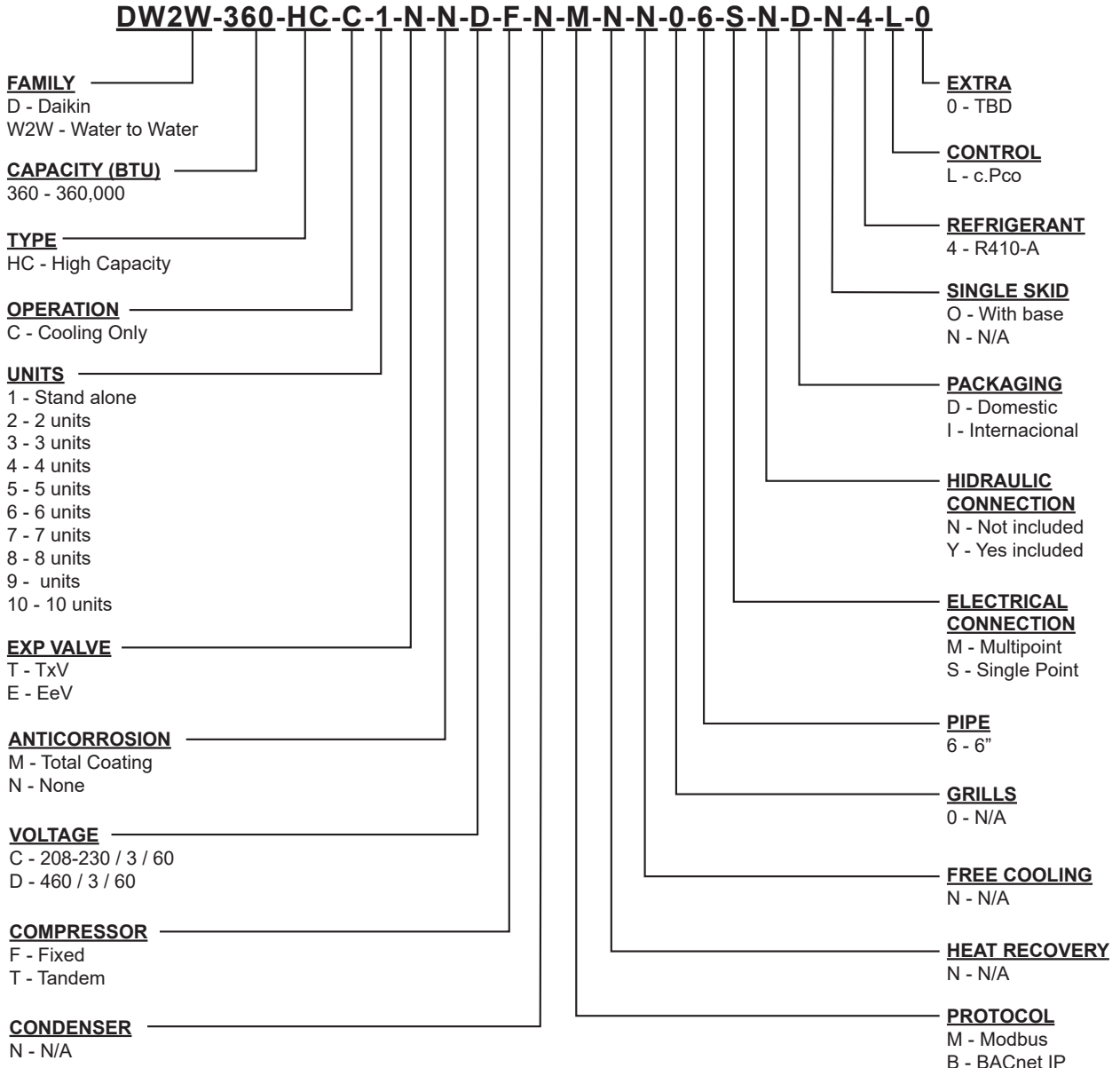
Caution indicates a potentially dangerous situation which may result in minor injury or equipment damage if not avoided.

**Notes:** Indicate important details or clarifying statements for the information presented.

Our units are designed to efficiently meet the air conditioning needs of any project. Our units have controls, logic routines and digital sensors that continuously monitor the system to adapt its operation to the level necessary to maintain optimal system conditions at all

times, thus achieving maximum performance and energy savings in a system that is simple to operate and maintain.

### NOMENCLATURE





## FEATURES/BENEFITS

### EFFICIENCY

Our units are designed to efficiently meet the air conditioning needs of any project. Our units have controls, logic routines and digital sensors that continuously monitor the system to adapt its operation to the level necessary to maintain optimal system conditions at all times, thus achieving maximum performance and energy savings in a system that is simple to operate and maintain.

All temperature sensors are calibrated and adjusted at the factory prior to shipment.

The start-up of the equipment must be carried out by a qualified technician, during the initial start-up the unit will be adjusted to the local conditions and all operating points will be checked.

Once the unit has been properly installed, the operation is a matter of pressing the digital start and stop button, until making sure that the unit works properly, after this the unit will operate automatically, turning on by itself according to the demand of the system and local conditions.

### FLEXIBILITY

Through intelligent processors and digital sensors, our equipment automatically modulates the operation of the system to maintain the water temperature at optimal operating conditions.

Our equipment was designed to be coupled with each other and to be combined to satisfy different load variations (Tandem Installation). Up to 8 modules can be combined in a single installation; these combinations can be made with Water Chiller Units of different capacities ranging from 3 to 30 tons of refrigeration.

The system capacity will then vary depending on the number and type of units installed in it.

### SAFETY

The structures of our units are made of galvanized steel sheet, coated with baked electrostatic powder paint (meets the ASTM-B117 1500 hour salt spray test) to ensure long durability and absence of corrosion under any weather conditions, such as direct solar light, rain and wind.

All our units are designed to fit into a reduced installation space, thus eliminating large installation areas. We only use high-quality components to ensure durability and safety, even in harsh environmental conditions.

**NOTE: For applications in highly corrosive climates our units can be coated inside and out with extra protection against corrosion. Ask your sales agent for more information.**

Our units have AHRI performance and efficiency certifications, and ETL safety certifications, in addition to complying with all industry safety standards.

We are members of the American Society of Air Conditioning, Refrigeration and Heating Engineers (ASHRAE).

To show our commitment to our clients and stakeholders; our equipment has a 1-year warranty after commissioning and start up. Our units use R410A refrigerant, which is harmless to the ozone layer and the most eco-friendly option possible.

All of our units are designed and manufactured with a focus on safety, performance and quality.

### DESIGN

The work carried out by our Engineering and Development department has resulted in equipment with high design efficiency and optimum performance during operation.

The selection of high quality main components, our quality processes and the control system during manufacturing, guarantee a high performance and safe unit.

All main components are rigorously tested and validated before being installed. Each designed unit has undergone long hours of rigorous testing to ensure the efficiency, safety, durability and quality of the entire system.

All external paint is baked and meets the strictest quality standards (1500 hour salt spray test ASTM-B117).

The selection of high-end compressors and heat exchangers ensure the capacity and high efficiency of the unit.

Optional water pumps\* are specially designed to function properly with minimal vibration and noise.

All our units have a reduced footprint, which facilitates installation and maintenance maneuvers, by being able to use stairs, doors and service elevators to move them.

\* Ask your sales rep about factory integrated pump options.

### COMMUNICATION

The units can be controlled independently (Individual Mode) or they may be connected to a central control unit (Tandem mode).

The operation and user access will be done through a color touch screen \*

Our units can be connected / integrated through different communication protocols; such as TCP / IP, ModBUS and BacNet \*\*, the most common protocols used in the Air Conditioning industry.

Our units keep track of all programmable variables in real time, such as load monitoring in the system, specific alarms of the refrigeration cycle, water cycle and the electrical system. As well as detection of external factors such as fire or flood (optional sensors).

The control system ensures the correct operation of the equipment by monitoring in real time the condition of the major components (high or low pressure of the refrigerant, conditions of the compressor and fan motors, etc.).

In case of failure, the event alarm will be recorded for later analysis, facilitating the location of a possible failure and its solution.

\* Depends on the type of control.

\*\* The communication protocols available depend on the type of control.

### INSTALLATION

The units have been designed for easy and simple installation. Victaulic type (grooved) fittings provide a simple and safe way to make water the pipe connections. These connections are located on both sides of the equipment, which provides great flexibility for water connections.

The individual assembly of the equipment reduces the cost of installation, the units have a rigid base that balances the weight of the unit and allows easy installation.

### MAINTENANCE

The simplicity in the design of the unit allows maximum ease when performing preventive / corrective maintenance on them. All major components are available to the maintenance personnel by simply opening the service panels. If an emergency stop occurs, the digital control of the unit will indicate in detail the cause of the alarm, helping to facilitate and speed up its solution.

### TESTING

Before leaving the factory, our units are tested multiple times. Pressure and vacuum tests are performed to detect possible leaks. Once the unit is verified to be leak free, the refrigerant is charged accurately for proper operation based on customer installation conditions.

All units are evaluated and tested at full load operation, with water flow, thermal load and line voltage under the current conditions in which the equipment operates in the field.

Finally, the operation of the equipment is tested and verified according to AHRI's operating standards.

**NOTE: The warranty policy requires that the commissioning be carried out by qualified personnel authorized by the company.**

### INSITUM® CORROSION PROTECTION

#### *Spray for coating hvac/r products*

Coating is a flexible, water-based, water-reducible, synthetic polymer corrosion coating designed specifically for the protection of HVAC/R coils and components. Insitu® Spray Applied Coating contains ES2 (embedded stainless steel pigment) technology, an anti-corrosion coating specifically designed for the protection of coils mounted in corrosive areas.

HVAC/R coils, components and enclosures will have a permanent water-based synthetic coating with ES2 pigment applied to all areas of the coating surface with no bridging of material between fins. Therefore, ES2 pigments are suitable for even the most corrosive environments and will maintain their appearance after many years of exposure. UV degradation ES2 pigments form a multilayer structure throughout the paint film.

This creates a barrier layer that reflects sunlight away from the paint film preventing UV rays from penetrating. As a result, UV degradation of individual polymer molecules is eliminated, film integrity is maintained and the pigment particles remain well anchored to the substrate.

The resulting smooth, hard finish prevents dirt build-up. The multilayer structure of ES2 pigments delays the passage of water molecules into the film and acts as an effective moisture barrier.



### Ideal applications for Insitu® spray-applied coatings.

- Mini-splits
- Packaged enclosures
- Condensing units
- Modular air handlers
- Air-cooled chillers
- Indoor and outdoor HVAC cabinets and copper tubing
- Heat exchange coils (water, condenser, evaporator, DX)

## TECHNICAL INFORMATION

Figure 1. Water-cooled DW2W-360 30 TR unit



Selection Conditions	
Head (ft)	0
Condenser inlet water temperature (°F)	95°
Water outlet temperature (°F)	105.97°

Cooling mode	
Rated capacity (BTU/hr)	36,000
Cooling capacity [tonR][BTU/hr]	28   336034
EER (BTU/W*hr)	13.8
IPLV (EER)	16.95

Electrical	
Power supply (V,Hz)	208-230/3/60
MOP (A)	251
MCA (A)	140
Total amperage (A)	80
Total consumption (kW)	24.4

Unit Data	
Refrigerant Type	R-410A (Charged)
Noise Level (Db)	68.0
Net Weight (lbs)	1,210
Operating Weight (lbs)	31.5
Controller	Digital (pCO)
Evaporator Total Pressure Drop (ft WG)	25.0 (74.7)
Condenser total pressure drop (ft WG)	26.0 (77.7)

Dimensions	
Length (in)	59.0000
Depth (in)	32.31
Height (in)	75.6250
Water inlet and outlet diameter (in)	6.0000

Compressor	
Type	Fixed
Quantity	2
Consumption (kW)	12.2 (2)
Amperage (A)	40 (2)

Evaporator	
Type	Stainless steel plates
Water flow (GPM)	68.64 / 42.90
Water inlet temperature (°F)	54°
Water outlet temperature (°F)	44°

Condenser	
Type	Plates
Water flow (gpm)	85.80

**Note: The document is subject to change without notice.**

## Honeywell Control Valve

**Figure 2. Control Valves and Actuators VRN with Dynamic Pressure Regulation**



### Application

VRN2 control valves with two-way dynamic pressure regulation maintain constant flow of hot or chilled water with up to 50% glycol solutions in closed-loop heating, ventilation and air conditioning (HVAC) systems regardless of head pressure variations above the specified minimum pressure drop.

These valve assemblies can be used with Honeywell Direct Coupled Actuators (DCA) with or without return spring, with a minimum torque of 35 lb-in (4 Nm) on valve sizes up to 3 in (DN80).

The built-in differential pressure regulator flows liquid through the valve regardless of supply pressure changes, eliminating control system "oscillation" even at low coil flow. The pressure regulator virtually eliminates cavitation in the valve and frees the control valve from the effects of piping components such as reducers and elbows.

Pressure independent control valves are designed to match the design flow in the coil, regardless of coil size. With VRN2 valves, there is no need to compensate the system for proper flow, as they allow the chillers to be operated according to the design temperature differential for maximum efficiency under all load conditions.

### Features

- Available in sizes from 1/2 to 3" with internal NPT (female) connections.
- Controls hot or cold water with up to 50% glycol.
- Regulated flow rates available from 1 to 95 gpm.
- Features a differential pressure regulator for constant pressure drop across the valve seat.
- Positive pressure, moving diaphragm regulator design allows accurate flow control of  $\pm 5\%$ .
- Features equal percentage flow characteristics with the use of a patented flow control ball insert.
- Available for multiple maximum flow ranges depending on valve size.
- Patented ball seals for low operating torque.
- Nickel-chrome plated brass or stainless steel trim.

- Factory-installed actuator option using Honeywell N05/S05 series direct-coupled actuators: floating, modulating (2-10 V), floating/modulating with spring return.
- Field configurable spring return actuators for normally open or normally closed fail-safe position.
- Removable operating handle to control valve during installation or in the event of a power failure.
- Up flow test port for vent fitting or pressure gauge.
- Three actuator orientations on valve for tight spaces.
- Integral snubber eliminates the effect of pressure variations and trapped air in the system while improving flow performance.

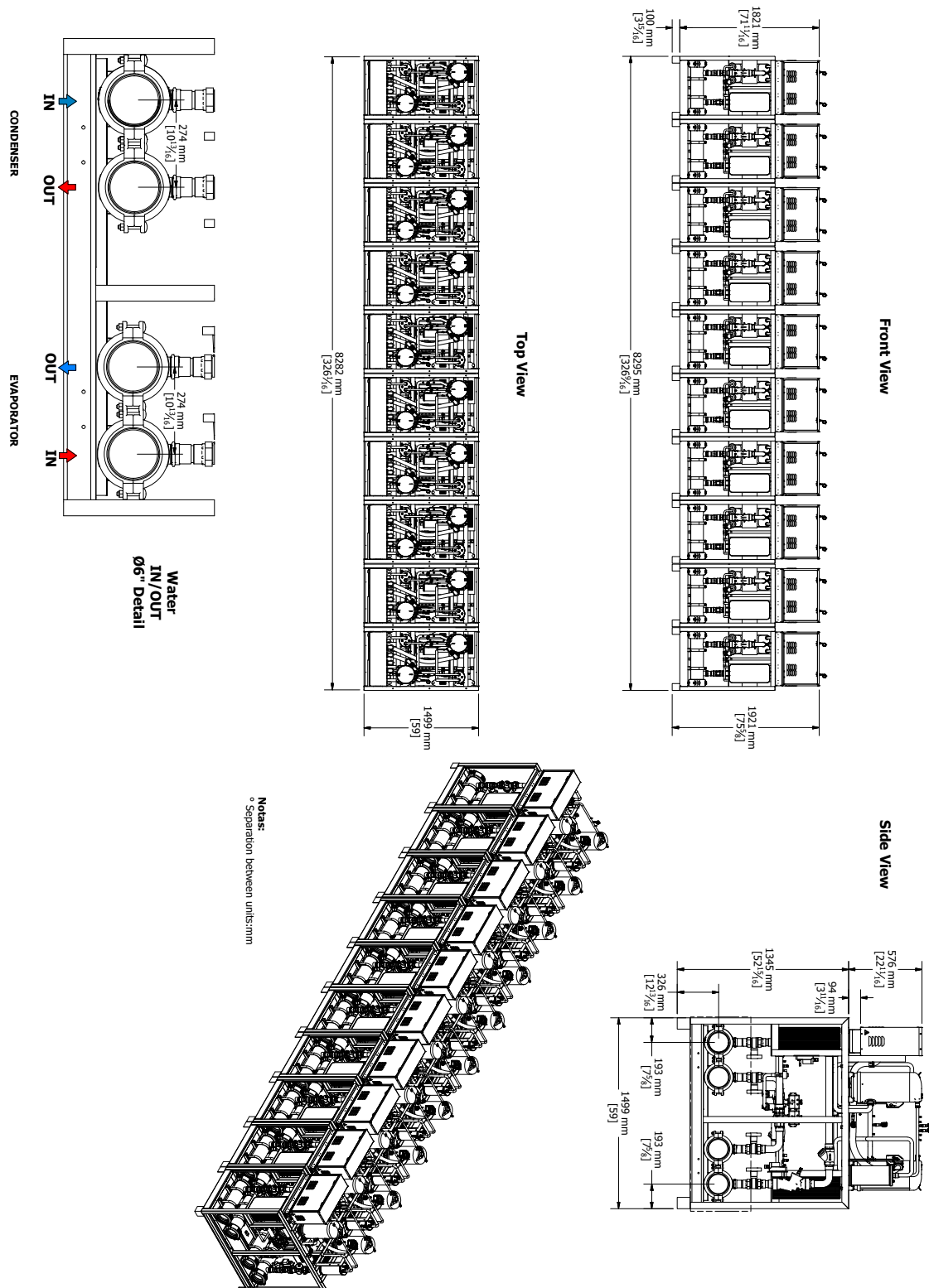
### Product Specifications

<b>Valve type:</b>	Control valve with dynamic pressure regulation
<b>Body style:</b>	Two-way, direct flow, full bore ball valve with patented flow control insert.
<b>Pipe Size:</b>	1/2 to 3 inch with female NPT pipe connections.
<b>Body pressure range (maximum):</b>	360 psi (2500 kPa) at 250°F (121 C).
<b>Controlled medium:</b>	Water or glycol solutions up to 50% concentration. Not suitable for combustible gases, oil or steam.
<b>Medium Temperature Range:</b>	-22 to +250°F (-30 to +121°C).
<b>Pressure Closing-Off:</b>	100 psid
<b>Materials</b>	
<b>Body:</b>	Forged brass (ASTM B283).
<b>Flow optimizer:</b>	Glass-reinforced, laser-milled Noryl®.
<b>Gasket (ball and stem):</b>	Nickel-chrome plated brass or stainless steel.
<b>Stem Seals:</b>	EPDM O-ring and Teflon™ bearings.
<b>Ball seals:</b>	Reinforced Teflon™ seals, with EPDM O-rings.
<b>Regulator:</b>	Hydrogenated acrylonitrile-butadiene rubber moving diaphragm in stainless steel housing.
<b>Compatible Actuators</b>	
<b>Minimum torque required:</b>	35 lb-in (4 Nm) hasta 3 in (≤DN80). 18 lb-in (2 Nm) hasta 3/4 in (y 1 in hasta 9 gpm).
<b>Without return spring:</b>	ML6161, ML7161, MN6105*, MN7505*.
<b>With return spring:</b>	MS6105, MS7505*, MS8105; MS6103, MS7503, MS8103 1/2 in or 3/4 in (DN15 ~ DN 20) only.

# DESIGN PARAMETERS

Figure 3. 30 -300 Tr dimensional configuration

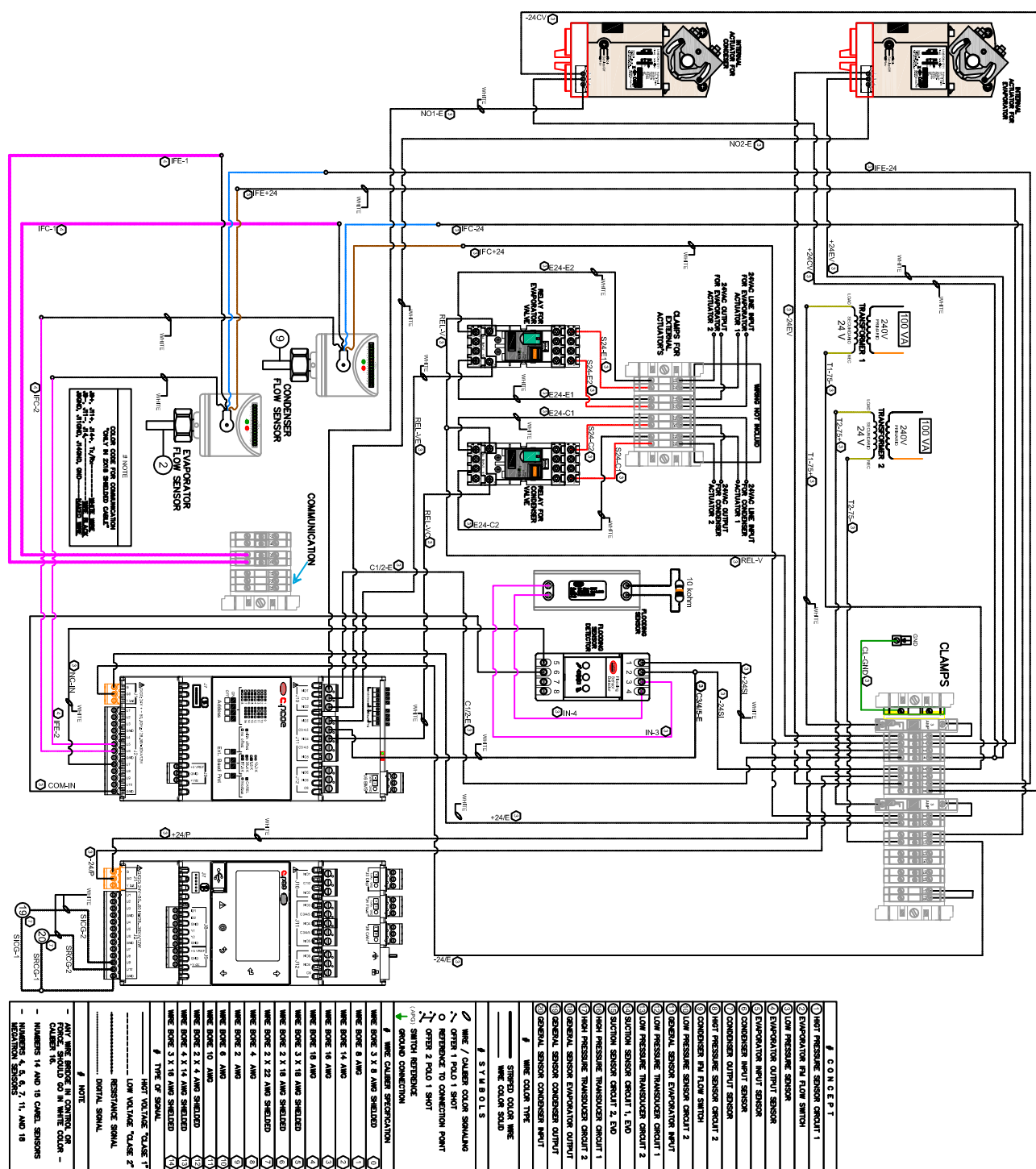
## General Specs.

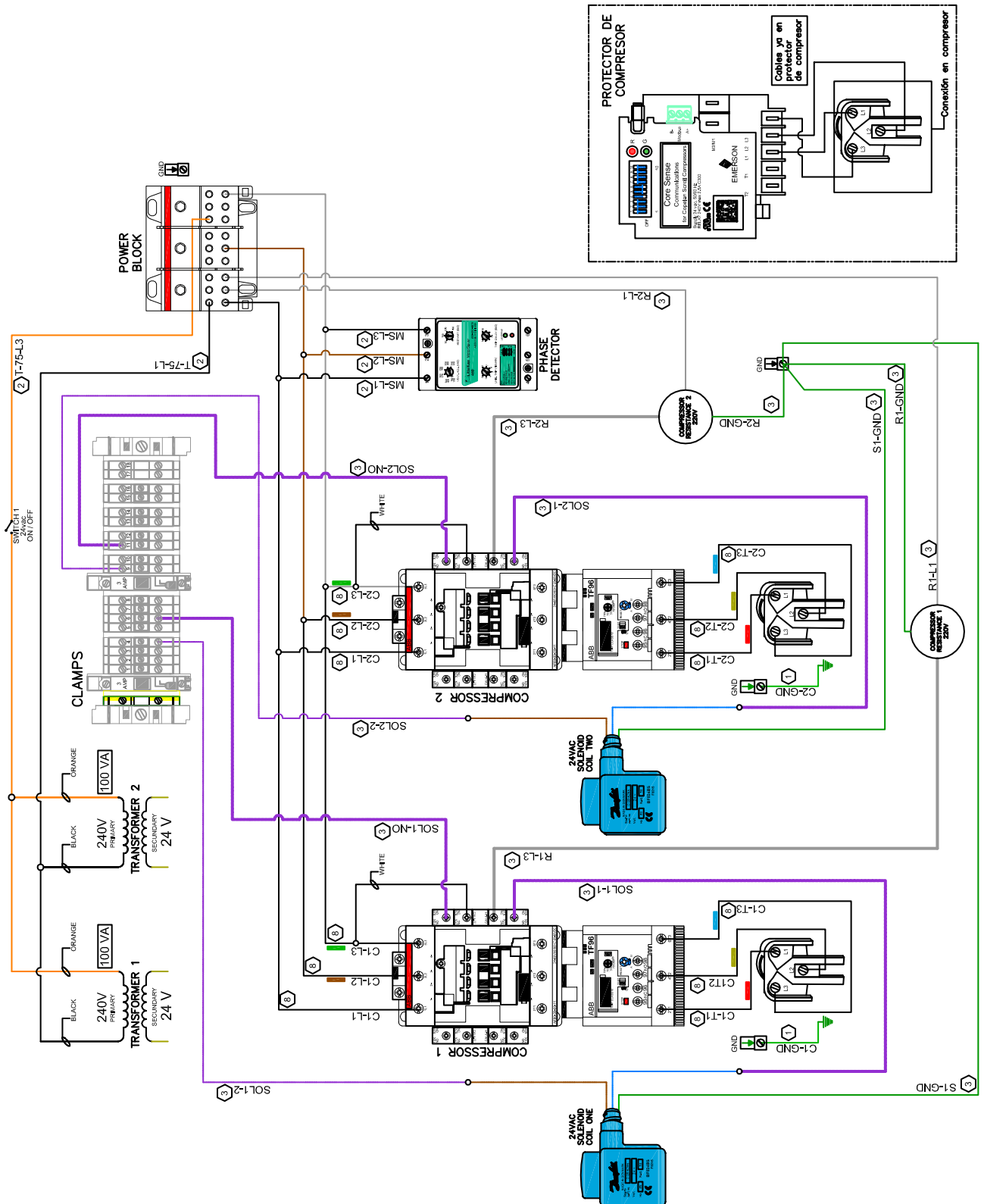




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# ELECTRICAL INFORMATION







**COMPRESSOR 1**  
COMPRESSOR 2

**COMPRESSION SWITCH**  
COMPRESSION MOTOR

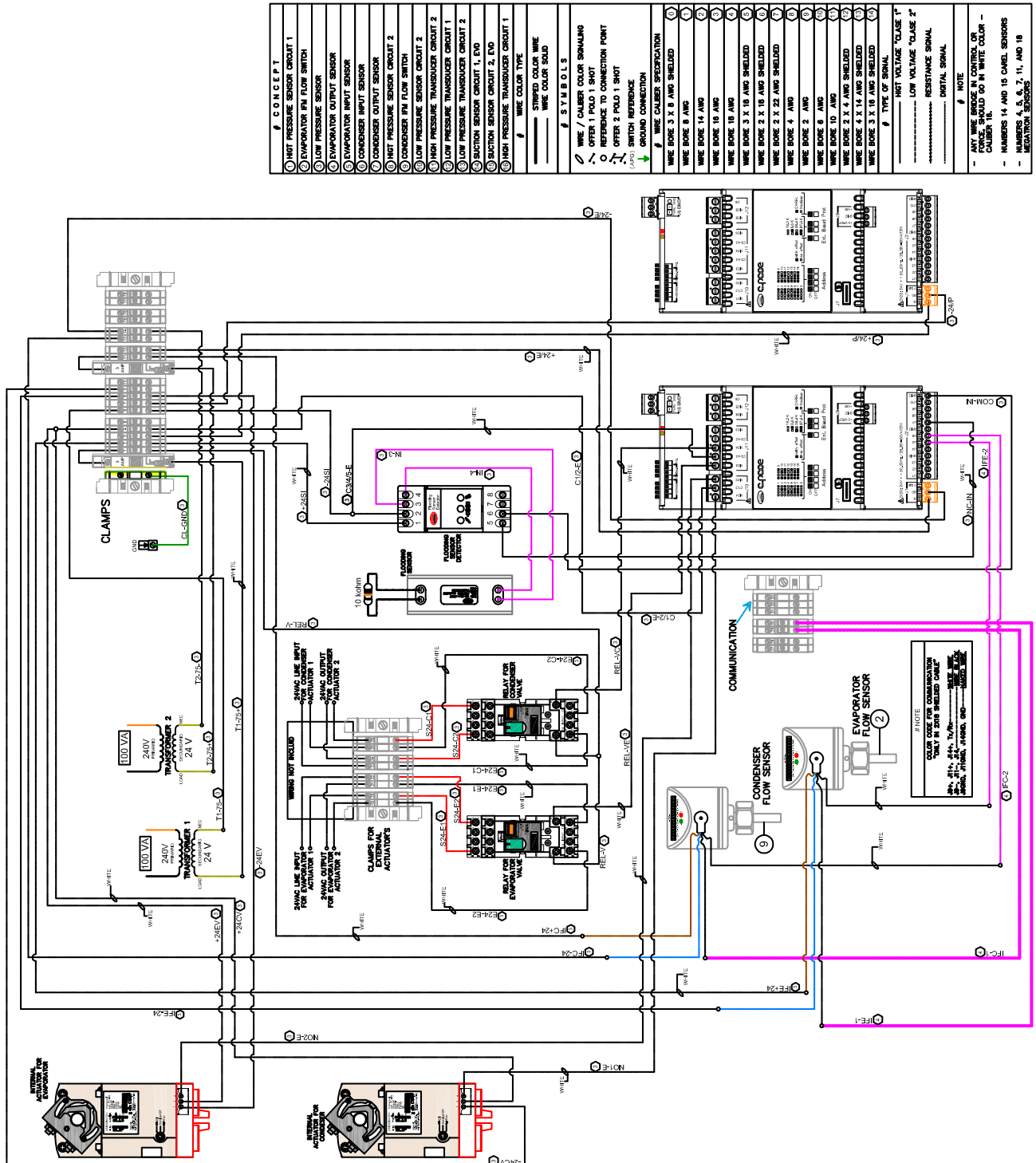
**PHASE DETECTOR**

**ISOLATING TRANSFORMER**

**TWIN**  
COMB

**NOTES:**

- 1. ALL WIRING SHOULD BE CONTROLLED BY A CIRCUIT BREAKER OR FUSE.
- 2. WIRING SHOULD BE DONE IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE (NEC).
- 3. WIRING SHOULD BE DONE IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS.
- 4. WIRING SHOULD BE DONE IN ACCORDANCE WITH THE LOCAL ELECTRICAL CODES.
- 5. WIRING SHOULD BE DONE IN ACCORDANCE WITH THE INTERNATIONAL ELECTROTECHNICAL COMMISSION (IEC) STANDARDS.
- 6. WIRING SHOULD BE DONE IN ACCORDANCE WITH THE EUROPEAN STANDARD EN 60947-1.
- 7. WIRING SHOULD BE DONE IN ACCORDANCE WITH THE JAPANESE STANDARD JIS C 0001.
- 8. WIRING SHOULD BE DONE IN ACCORDANCE WITH THE CHINESE STANDARD GB 4793.1.
- 9. WIRING SHOULD BE DONE IN ACCORDANCE WITH THE INDIAN STANDARD IS 1565.
- 10. WIRING SHOULD BE DONE IN ACCORDANCE WITH THE AUSTRALIAN STANDARD AS/NZS 3000.
- 11. WIRING SHOULD BE DONE IN ACCORDANCE WITH THE SOUTH AFRICAN STANDARD SANS 10142-1.
- 12. WIRING SHOULD BE DONE IN ACCORDANCE WITH THE NEW ZEALAND STANDARD NZS 3233.
- 13. WIRING SHOULD BE DONE IN ACCORDANCE WITH THE SINGAPORE STANDARD SS 638.
- 14. WIRING SHOULD BE DONE IN ACCORDANCE WITH THE HONG KONG STANDARD HKAS 60947-1.
- 15. WIRING SHOULD BE DONE IN ACCORDANCE WITH THE TAIWAN STANDARD CNS 14295.
- 16. WIRING SHOULD BE DONE IN ACCORDANCE WITH THE SOUTH KOREAN STANDARD KS X 0001.
- 17. WIRING SHOULD BE DONE IN ACCORDANCE WITH THE MALAYSIAN STANDARD MS 1565.
- 18. WIRING SHOULD BE DONE IN ACCORDANCE WITH THE PHILIPPINE STANDARD PS 1565.
- 19. WIRING SHOULD BE DONE IN ACCORDANCE WITH THE VIETNAM STANDARD TCVN 1565.
- 20. WIRING SHOULD BE DONE IN ACCORDANCE WITH THE THAI STANDARD TIS 1565.
- 21. WIRING SHOULD BE DONE IN ACCORDANCE WITH THE CAMBODIAN STANDARD S 1565.
- 22. WIRING SHOULD BE DONE IN ACCORDANCE WITH THE LAOSIAN STANDARD L 1565.
- 23. WIRING SHOULD BE DONE IN ACCORDANCE WITH THE MYANMAR STANDARD BS 1565.
- 24. WIRING SHOULD BE DONE IN ACCORDANCE WITH THE BURUNDI STANDARD B 1565.
- 25. WIRING SHOULD BE DONE IN ACCORDANCE WITH THE RWANDA STANDARD R 1565.
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# ELECTRICAL INFORMATION

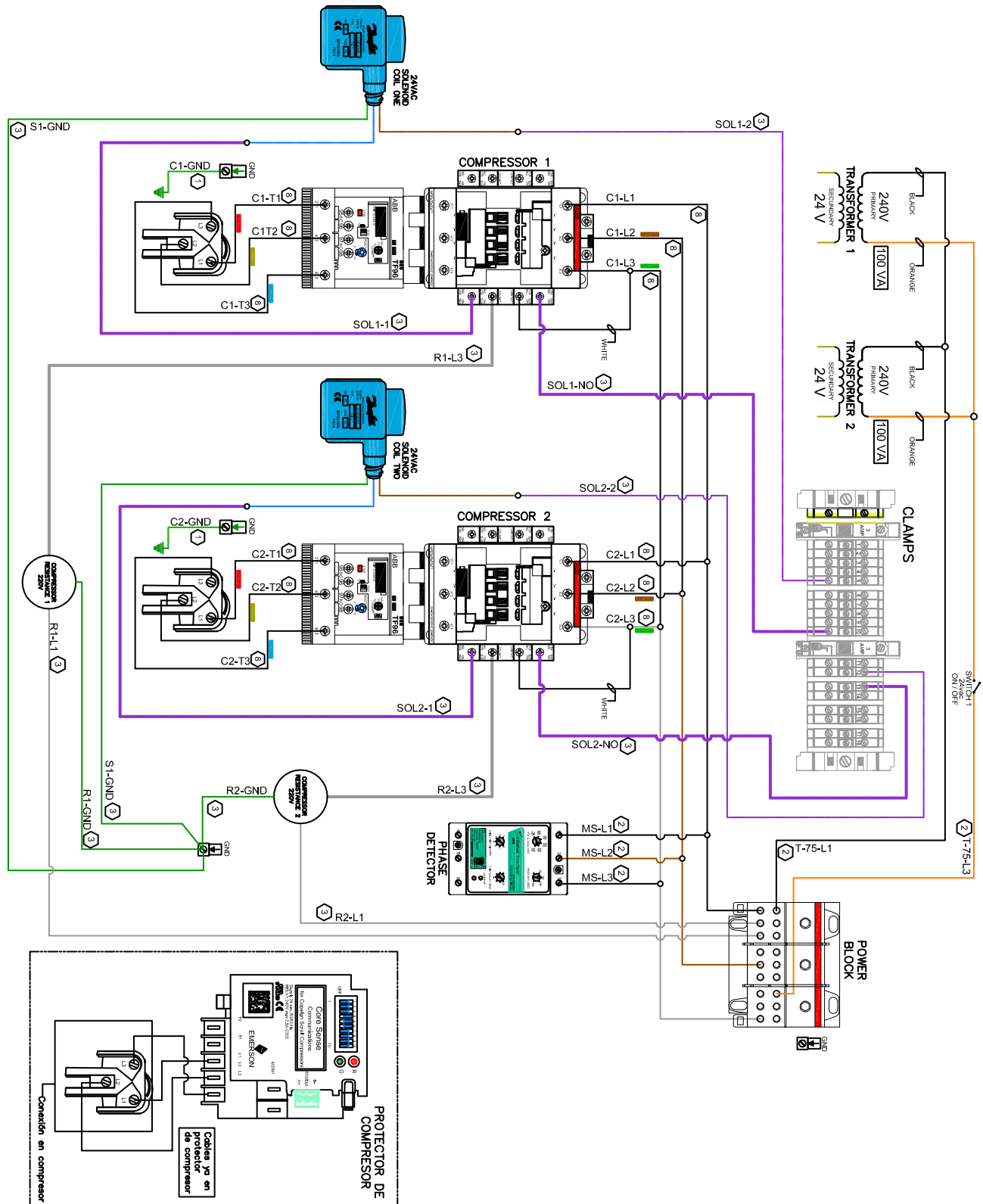
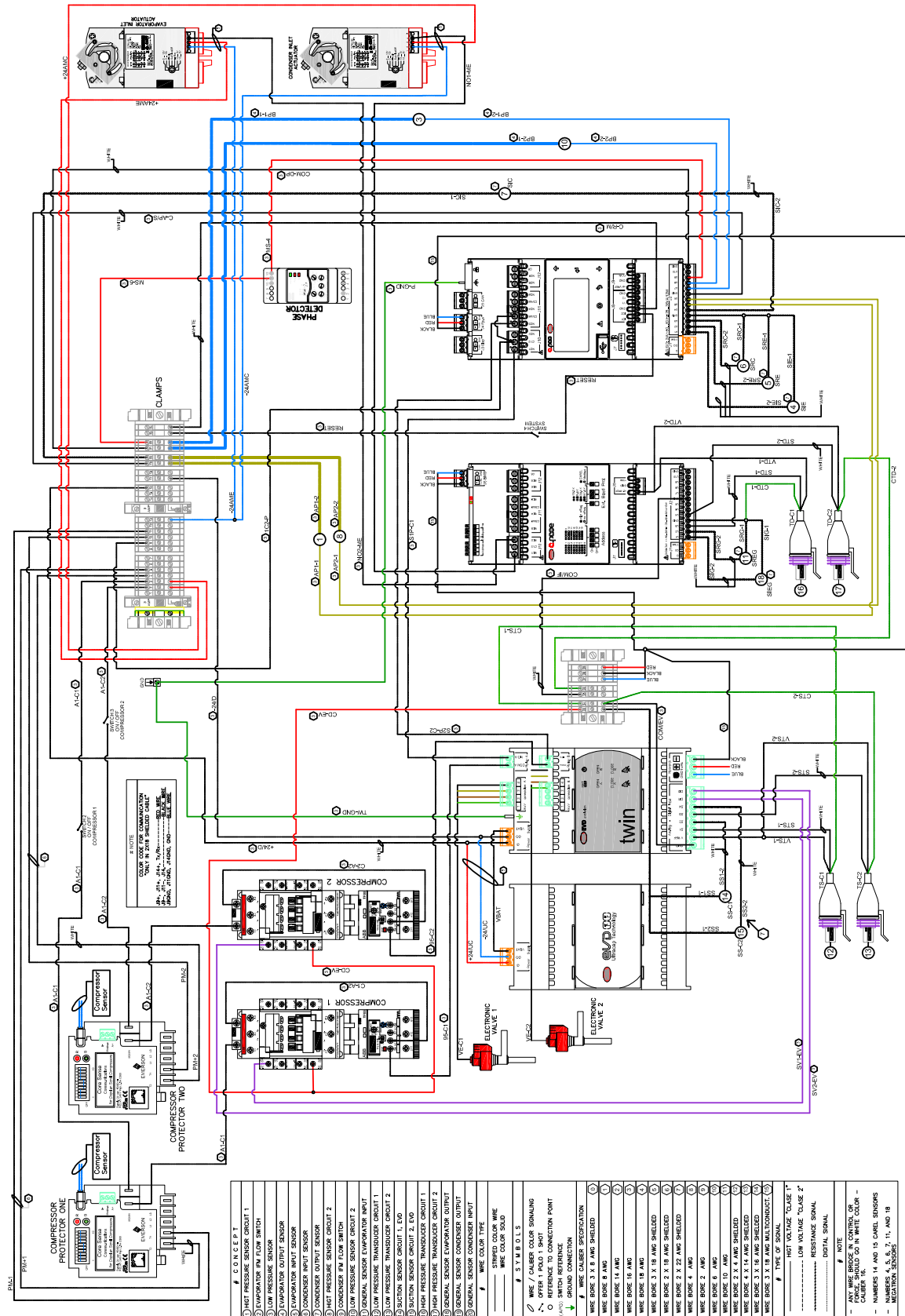
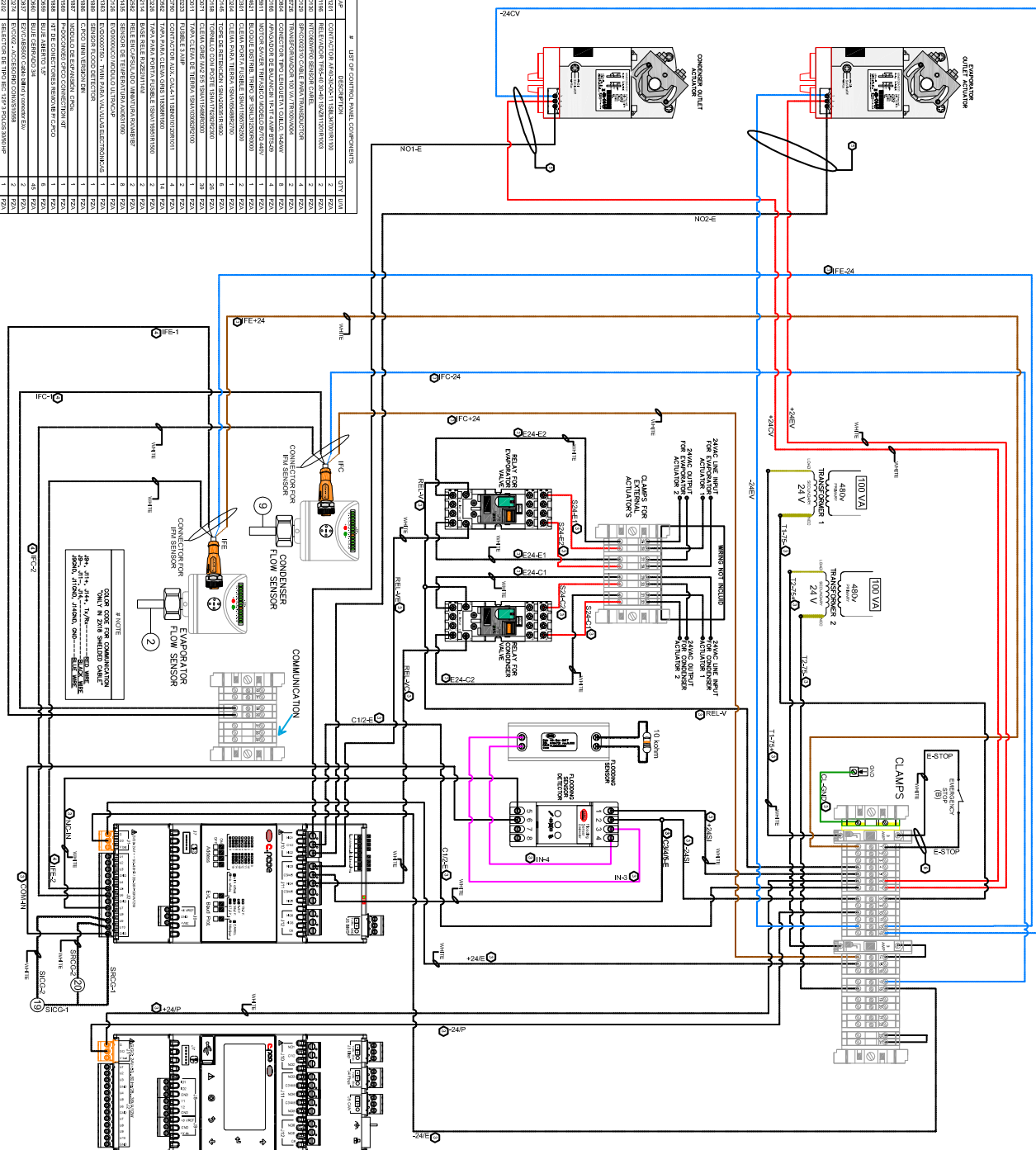


Figure 8. Cold only diagram (master 440v)

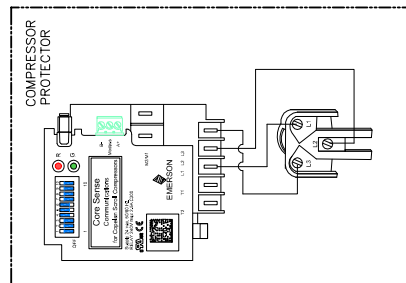


# ELECTRICAL INFORMATION

#	LIST OF CONTROL PANEL COMPONENTS	QTY	UNIT
100101	CONNECTION KIT (COP-011) (REPLACEMENT)	1	PCS
100106	RELAY BOARD (REPLACEMENT) (REPLACEMENT)	1	PCS
100107	RELAY BOARD (REPLACEMENT) (REPLACEMENT)	1	PCS
100108	RELAY BOARD (REPLACEMENT) (REPLACEMENT)	1	PCS
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100140	RELAY BOARD (REPLACEMENT) (REPLACEMENT)	1	PCS

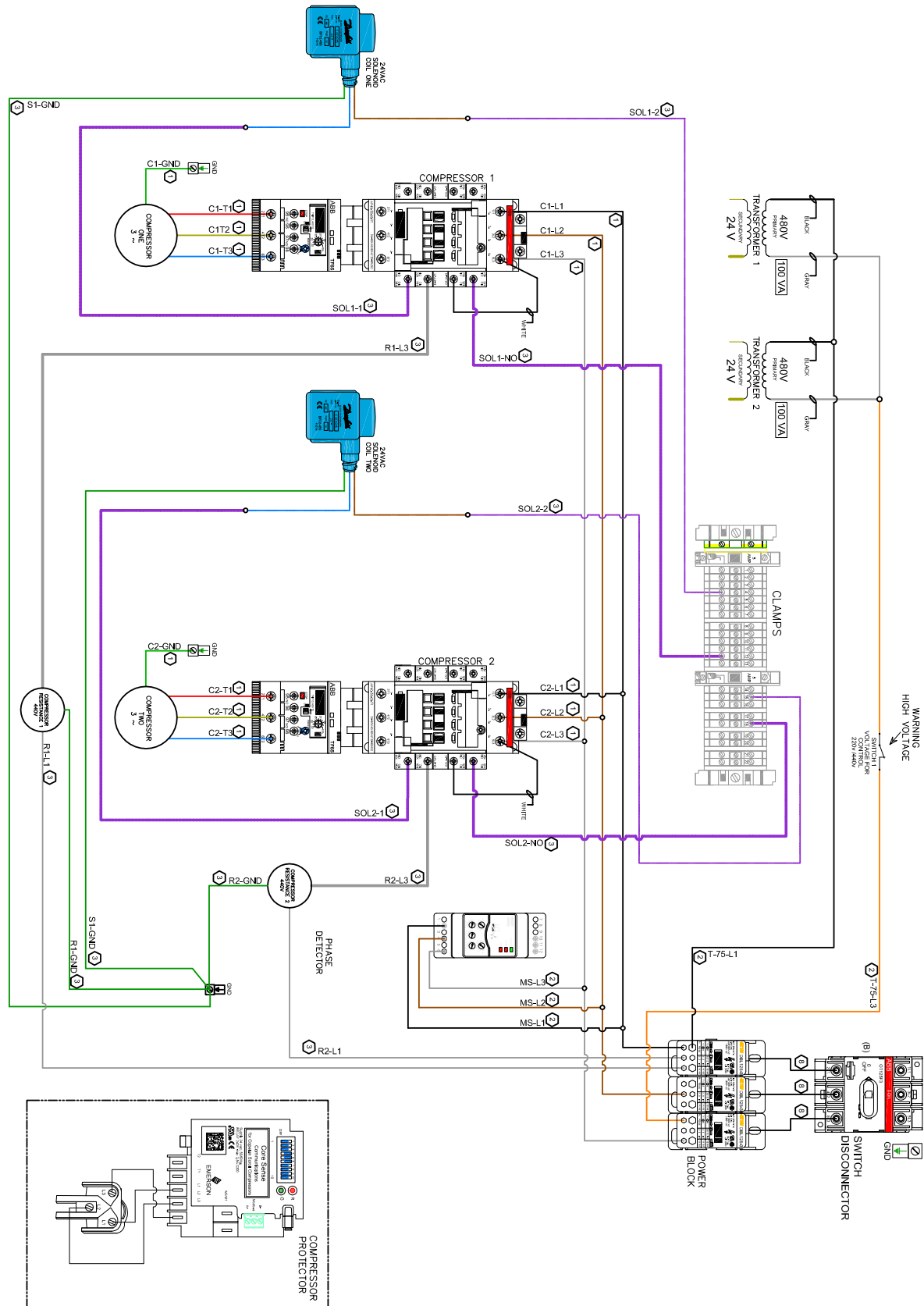


#	CONCEPT
①	HIGH PRESSURE SENSOR CIRCUIT 1
②	EVAPORATOR FAN FLOW SWITCH
③	LOW PRESSURE SENSOR
④	EVAPORATOR OUTPUT SENSOR
⑤	CONDENSER INPUT SENSOR
⑥	CONDENSER OUTPUT SENSOR
⑦	HIGH PRESSURE SENSOR CIRCUIT 2
⑧	CONDENSER FAN FLOW SWITCH
⑨	LOW PRESSURE SENSOR CIRCUIT 2
⑩	GENERAL SENSOR EVAPORATOR INPUT
⑪	LOW PRESSURE TRANSDUCER CIRCUIT 1
⑫	LOW PRESSURE TRANSDUCER CIRCUIT 2
⑬	Suction Sensor Circuit 1, 2, and 3
⑭	HIGH PRESSURE TRANSDUCER CIRCUIT 1
⑮	HIGH PRESSURE TRANSDUCER CIRCUIT 2
⑯	GENERAL SENSOR EVAPORATOR OUTPUT
⑰	GENERAL SENSOR CONDENSER INPUT
⑱	GENERAL SENSOR CONDENSER OUTPUT
⑲	WIRE COLOR TYPE
⑳	STRIPED COLOR WIRE
㉑	WIRE / CLAMP COLOR SIGNALING
㉒	WIRE / CLAMP COLOR SIGNALING
㉓	REFERENCE TO CONNECTION POINT
㉔	GROUND CONNECTION
㉕	WIRE CLAMP SPECIFICATION
㉖	WIRE BORE 3 X 8 AWG SHIELDED
㉗	WIRE BORE 8 AWG
㉘	WIRE BORE 14 AWG
㉙	WIRE BORE 18 AWG
㉚	WIRE BORE 18 AWG SHIELDED
㉛	WIRE BORE 3 X 18 AWG SHIELDED
㉜	WIRE BORE 2 X 22 AWG SHIELDED
㉝	WIRE BORE 4 AWG
㉞	WIRE BORE 2 AWG
㉟	WIRE BORE 6 AWG
㊱	WIRE BORE 10 AWG
㊲	WIRE BORE 2 X 4 AWG SHIELDED
㊳	WIRE BORE 4 X 14 AWG SHIELDED
㊴	WIRE BORE 3 X 16 AWG SHIELDED
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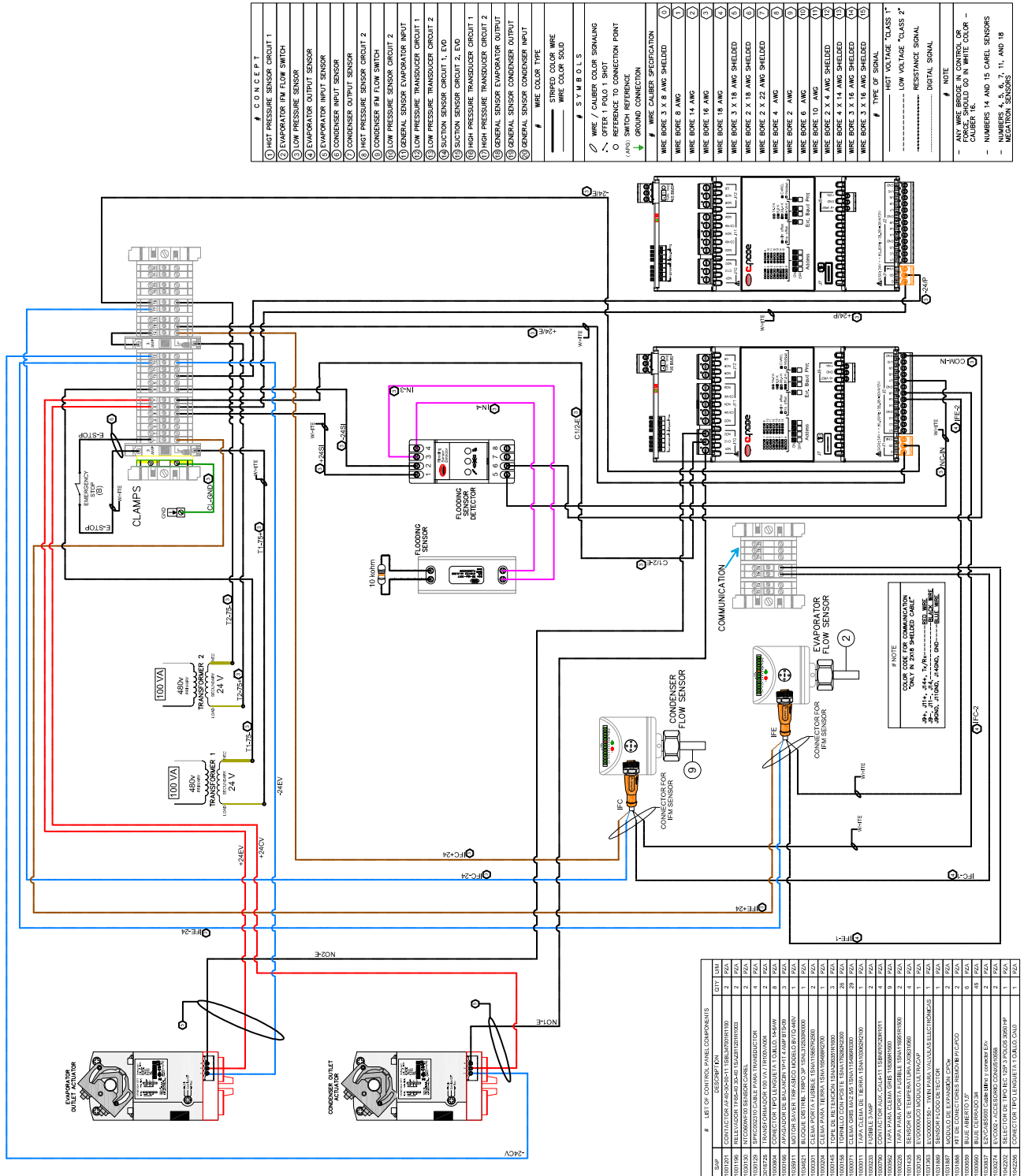


# ELECTRICAL INFORMATION

Figure 9. Cold only diagram (slave 440v)

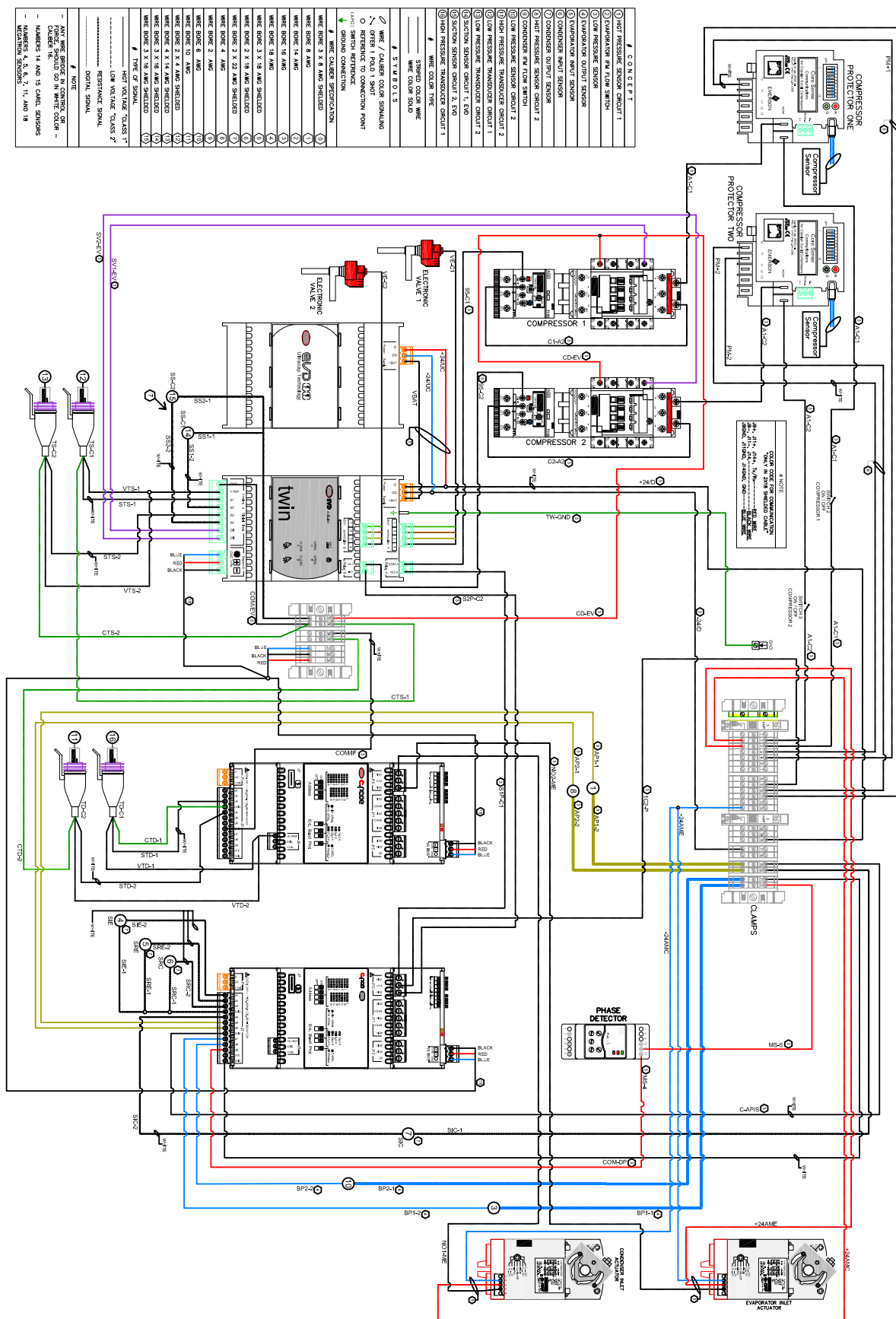








# ELECTRICAL INFORMATION



**Table 1. Maximum overcurrent protection and minimum circuit amperage (220v)**

# EQ	TR/UN	TR Total	MCA	MOP
1	30	30	140	251
2	30	60	251	363
3	30	90	363	474
4	30	120	474	586
5	30	150	586	698
6	30	180	698	809
7	30	210	809	921
8	30	240	921	1032
9	30	270	1032	1144
10	30	300	1144	1256

**Table 2. Maximum overcurrent protection and minimum circuit amperage (440v)**

# EQ	TR/UN	TR Total	MCA	MOP
1	30	30	66	118
2	30	60	118	171
3	30	90	171	224
4	30	120	224	276
5	30	150	276	329
6	30	180	329	381
7	30	210	381	434
8	30	240	434	487
9	30	270	487	539
10	30	300	539	592

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